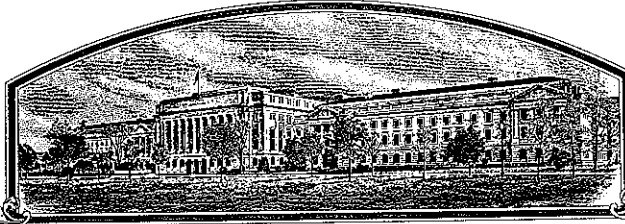


No.

9700026



# THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Western Plant Breeders

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED, PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREBY ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSE, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT, COMMON

'Cuyama'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this thirty-first day of March, in the year of our Lord two thousand.

Attest:

Ann Marie Thwa

Commissioner  
Plant Variety Protection Office

John G. Dickinson

Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE  
SCIENCE DIVISION - PLANT VARIETY PROTECTION OFFICE

## APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions and information collection burden statement on reverse)

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a).

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) (as it is to appear on the Certificate)  Western Plant Breeders, Inc.		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER  PH990-15	3. VARIETY NAME  CUYAMA
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country)  8111 Timberline Drive Bozeman, MT 59715		5. TELEPHONE (include area code)  (406) 587-1218	<b>FOR OFFICIAL USE ONLY</b> PVPO NUMBER 9700026 DATE Oct. 31, 1996 FILING AND EXAMINATION FEE 2,450.00 DATE Oct. 31, 1996 CERTIFICATION FEE 300 DATE 1-19-00
		6. FAX (include area code)  (406) 586-8247	
7. GENUS AND SPECIES NAME  Triticum Aestivum	8. FAMILY NAME (Botanical)  Gramineae		
9. CROP KIND NAME (Common name)  Common Wheat			
10. IF THE APPLICANT NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION (corporation, partnership, association, etc.) (Common name)  Corporation			
11. IF INCORPORATED, GIVE STATE OF INCORPORATION  Arizona		12. DATE OF INCORPORATION  August 24, 1990	
13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS  Kim C. Shantz Western Plant Breeders 6720 W. Chicago Street #4 P.O. Box 6904 Chandler, AZ 85226-3300 Yuma AZ 85366			14. TELEPHONE (include area code) 520-782-2749 (602) 940-7654 15. FAX (include area code) (602) 940-7654
16. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse) a. <input checked="" type="checkbox"/> Exhibit A. Origin and Breeding History of the Variety b. <input checked="" type="checkbox"/> Exhibit B. Statement of Distinctness c. <input checked="" type="checkbox"/> Exhibit C. Objective Description of the Variety d. <input type="checkbox"/> Exhibit D. Additional Description of the Variety e. <input checked="" type="checkbox"/> Exhibit E. Statement of the Basis of the Applicant's Ownership f. <input checked="" type="checkbox"/> Voucher Sample (2,600 viable untreated seeds or, for tuber propagated varieties verification that tissue culture will be deposited and maintained in a public repository) g. <input checked="" type="checkbox"/> Filing and Examination Fee (\$2,450), made payable to "Treasurer of the United States" (Mail to PVPO)			
17. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY, AS A CLASS OF CERTIFIED SEED? (See Section 83(a) of the Plant Variety Protection Act) <input type="checkbox"/> YES (If "yes," answer items 18 and 19 below) <input checked="" type="checkbox"/> NO (If "no," go to item 20)			
18. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		19. IF "YES" TO ITEM 18, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED? <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED	
20. HAS THE VARIETY OR A HYBRID PRODUCED FROM THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES? <input checked="" type="checkbox"/> YES (If "yes," give names of countries and dates) <input type="checkbox"/> NO USA DECEMBER, 1995			
21. The applicant(s) declare that a viable sample of basic seed of the variety will be furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate. The undersigned applicant(s) is(are) the owner(s) of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act. Applicant(s) is(are) informed that false representation herein can jeopardize protection and result in penalties.			
SIGNATURE OF APPLICANT (Owner(s))  Kim C. Shantz		SIGNATURE OF APPLICANT (Owner(s))  Dan R. Biggerstaff	
NAME (Please print or type)  Kim C. Shantz		NAME (Please print or type)  Dan R. Biggerstaff	
CAPACITY OR TITLE  Wheat Breeder	DATE  10/24/96	CAPACITY OR TITLE  General Manager	DATE  10-30-96

**Exhibit A.****Origin and Breeding History**

Cuyama is a hard red spring wheat originating from a Male Sterile Facilitated Recurrent Selection Population (MSFRSP), designated Sep HRSP-88. Western Plant Breeders made the crosses in Phoenix, Arizona in 1988. The breeding method was a modified bulk. The MSFRSP was formed by crossing Septoria tritici resistant lines (VEE/BH1146 - 5 lines, Cleo/Inia//Anza F4, Tadorna/Inia F8, Nudif TP 250/Inia//Anza F4) to male sterile plants in populations adapted to the southwestern irrigated deserts in 1987. In 1988, selected F2 plants were intercrossed to form Sep HRSP-88. The F1 bulk was grown in Bozeman, Montana the summer of 1988. From the F2 grown at Phoenix, Arizona in 1989, selected heads were bulked and the resulting F3 was grown in Bozeman, Montana the summer of 1989. Individual heads were harvested from this bulk and were grown as head rows at Phoenix in 1990. One plant was selected from a F4 row and was grown as a plot at Bozeman, Montana in 1990. The resulting F5 plot designated PH 990-15 was harvested in bulk and yield tested in Arizona and California in 1991, 1992, 1993, and 1994. Stability and uniformity have been observed for four generations. 32 heads were selected in 1993 and were grown as head rows in Bozeman, Montana in 1993. Eighteen head rows were selected and were grown in head row plots at Yuma, AZ in 1994. Twelve of these head row plots that were uniform and similar in appearance were bulked and was designated Breeders' seed. This seed was used to plant 10 acres of Foundation seed production in Bozeman, Montana in 1994.

A variant that is similar to Cuyama but is 3 to 10 inches taller occurs at a frequency of up to .04%. A second variant that may be found in the cultivar Cuyama is white kernel color, occurring at a frequency of up to .1%

**EXHIBIT A**

Cuyama has been uniform and stable in agronomic appearance and performance across four generations. Agronomic data to support stability is presented in the tables.

The selection criteria used during the breeding of Cuyama were as follows:

- |           |   |
|-----------|---|
| <b>F1</b> | <b>None</b>   |
| <b>F2</b> | <b>Large spikes, semidwarf growth habit and robust plants</b>   |
| <b>F3</b> | <b>None, random harvest</b>   |
| <b>F4</b> | <b>Visual high yield rows, semidwarf growth habit, flowering date, %<br/>protein, S.D.S. sedimentation, Test Weight</b> |
| <b>F5</b> | <b>None</b>   |
| <b>F6</b> | <b>Yield, flowering date, % protein, Test weight, S.D.S sedimentation,<br/>Lodging</b>                                  |
| <b>F7</b> | <b>Same as F6 plus leaf rust resistance</b>   |
| <b>F8</b> | <b>Same as F6 plus stripe rust resistance and milling and baking quality</b>  |

## **Exhibit B**

### **Statement of Distinctness**

Cuyama is a day length insensitive, hard red spring wheat with an average height of 91 cm, which is 10 cm taller than Yecora Rojo and 3 cm shorter than Express. Cuyama has yellow-green leaves at boot stage. The flag leaf is erect and twisted at boot stage. The auricles are white with no pubescence. Stems are white and hollow with pubescence on the last rachis internode. The anthers are yellow. The spike is awned, long wide, mid-dense and white with and oblong shape. The awns are white and the spikes are erect at maturity. The glumes are white, long and wide and have square shaped shoulders. The beaks are narrow, acuminate and medium long. Cuyama has long wide, elliptical seed. The brushes are large and medium long. The seed crease is medium width and medium depth. The cheeks are rounded and the germ size is large. Cuyama most resembles Express. Cuyama differs from Express in that it is earlier to anthesis, has square glume shoulders instead of oblique ones, has yellow green leaves at booting instead of blue green and has shorter beaks. The above comparisons along with the objective description show Cuyama to be a distinctive variety of common wheat.

OBJECTIVE DESCRIPTION OF VARIETY  
WHEAT (*Triticum* spp.)

NAME OF APPLICANT(S) Western Plant Breeders, Inc.	FOR OFFICIAL USE ONLY
ADDRESS (Street and No. or R.F.D. No., City, State, and Zip Code) 8111 Timberline Drive Bozeman, MT 59715	PVPO NUMBER 9700026
	VARIETY NAME CUYAMA
	TEMPORARY OR EXPERIMENTAL DESIGNATION PH 990-15

PLEASE READ ALL INSTRUCTIONS CAREFULLY: Place the appropriate number that describes the varietal character of this variety in the boxes below. Place a zero in the first box (e.g.    or   ) when number is either 99 or less or 9 or less respectively. Data for quantitative plant characters should be based on a minimum of 100 plants. Comparative data should be determined from varieties entered in the same trial. Royal Horticultural Society or any recognized color standard may be used to determine plant colors; designate system used: \_\_\_\_\_

Please answer all questions for your variety; lack of response may delay progress of your application.

1. KIND:

1=Common 2=Durum 3=Club 4=Other (SPECIFY) \_\_\_\_\_

2. VERNALIZATION:

1=Spring 2=Winter 3=Other (SPECIFY) \_\_\_\_\_

3. COLEOPTILE ANTHOCYANIN:

1=Absent 2=Present

4. JUVENILE PLANT GROWTH:

1=Prostrate 2=Semi-erect 3=Erect

5. PLANT COLOR (boot stage):

1 = Yellow-Green 2 = Green 3 = Blue-Green

6. FLAG LEAF (boot stage):

1 = Erect 2 = Recurved  2 1 = Not Twisted 2 = Twisted

7. EAR-EMERGENCE:

4 Number of Days Earlier Than Express \*

3 Number of Days Later Than Yecora Rojo \*

8. ANTHOR COLOR: -

1 = YELLOW 2 = PURPLE

9. PLANT HEIGHT (from soil to top of head, excluding awns):

0 cm Taller Than Yecora Rojo \*

3 cm Shorter Than Express \*

## 10. STEM:

## A. ANTHOCYANIN

☐ 1 = Absent      2 = Present

## B. WAXY BLOOM

☐ 1 = Absent      2 = Present

## C. HAIRINESS (last internode of rachis)

☐ 1 = Absent      2 = Present

## D. INTERNODE (SPECIFY NUMBER) \_\_\_\_\_

☐ 1 = Hollow      2 = Semi-solid      3 = Solid

## E. PEDUNCLE

☐ 1 = Absent      2 = Present☐ cm Length

## 11. HEAD (at Maturity):

## A. DENSITY

☐ 1 = Lax      2 = Middense      3 = Dense

## B. SHAPE

☐ 1 = Tapering      2 = Strap      3 = Clavate      4 = Other (SPECIFY) \_\_\_\_\_

## C. CURVATURE

☐ 1 = Erect      2 = Inclined      3 = Recurved

## D. AWNEDNESS

☐ 1 = Awnless      2 = Apically Awnletted      3 = Awnletted      4 = Awned

## 12. GLUMES (at Maturity):

## A. COLOR

☐ 1 = White      2 = Tan      3 = Other (SPECIFY) \_\_\_\_\_

## B. SHOULDER

☐ 1 = Wanting      2 = Oblique      3 = Rounded      4 = Square      5 = Elevated      6 = Apiculate

## C. BEAK

☐ 1 = Obtuse      2 = Acute      3 = Acuminate

## D. LENGTH

☐ 1 = Short (ca. 7mm)      2 = Medium (ca. 8mm)      3 = Long (ca. 9mm)

## E. WIDTH

☐ 1 = Narrow (ca. 3mm)      2 = Medium (ca. 3.5mm)      3 = Wide (ca. 4mm)

## 13. SEED:

## A. SHAPE

☐ 1 = Ovate      2 = Oval      3 = Elliptical

## B. CHEEK

☐ 1 = Rounded      2 = Angular

## C. BRUSH

☐ 1 = Short      2 = Medium      3 = Long☐ 1 = Not Collared      2 = Collared

## D. CREASE

☐ 1 = Width 60% or less of Kernel  
2 = Width 80% or less of Kernel  
3 = Width Nearly as Wide as Kernel☐ 1 = Depth 20% or less of Kernel  
2 = Depth 35% or less of Kernel  
3 = Depth 50% or less of Kernel

SEED: (continued)

## E. COLOR

 1 = White    2 = Amber    3 = Red    4 = Other (SPECIFY) \_\_\_\_\_

## F. TEXTURE

 1=Hard    2=Soft

## G. PHENOL REACTION (see instructions):

 1 = Ivory    2 = Fawn    3 = Light Brown    4 = Dark Brown    5 = Black

14. DISEASE: (0=Not Tested; 1=Susceptible; 2=Resistant; 3=Intermediate; 4=Tolerant)

PLEASE INDICATE THE SPECIFIC RACE OR STRAIN TESTED

Stem Rust (*Puccinia graminis* f. sp. *tritici*)
 \_\_\_\_\_
Stripe Rust (*Puccinia striiformis*)
 \_\_\_\_\_
Tan Spot (*Pyrenophora tritici-repentis*)
 \_\_\_\_\_
Halo Spot (*Selenophoma donacis*)
 \_\_\_\_\_

Septoria nodorum (Glume Blotch)

 \_\_\_\_\_

Septoria avenae (Speckled Leaf Disease)

 \_\_\_\_\_

Septoria tritici (Speckled Leaf Blotch)

 \_\_\_\_\_
Scab (*Fusarium* spp.)
 \_\_\_\_\_

"Black Point" (Kernel Smudge)

 \_\_\_\_\_

Barley Yellow Dwarf Virus (BYDV)

 \_\_\_\_\_

Soilborne Mosaic Virus (SBMV)

 \_\_\_\_\_

Wheat Yellow (Spindle Streak) Mosaic Virus

 \_\_\_\_\_

Wheat Streak Mosaic Virus (WSMV)

 \_\_\_\_\_

Other (SPECIFY) \_\_\_\_\_

 \_\_\_\_\_

Other (SPECIFY) \_\_\_\_\_

 \_\_\_\_\_

Other (SPECIFY) \_\_\_\_\_

 \_\_\_\_\_
Leaf Rust (*Puccinia recondita* f. sp. *tritici*)
 \_\_\_\_\_
Loose Smut (*Ustilago tritici*)
 \_\_\_\_\_
Flag Smut (*Urocystis agropyri*)
 \_\_\_\_\_
Common Bunt (*Tilletia tritici* or *T. laevis*)
 \_\_\_\_\_
Dwarf Bunt (*Tilletia controversa*)
 \_\_\_\_\_
Karnal Bunt (*Tilletia indica*)
 \_\_\_\_\_
Powdery Mildew (*Erysiphe graminis* f. sp. *tritici*)
 \_\_\_\_\_

"Snow Molds"

 \_\_\_\_\_
Common Root Rot (*Fusarium*, *Cochliobolus* and *Bipolaris* spp.)
 \_\_\_\_\_
Rhizoctonia Root Rot (*Rhizoctonia solani*)
 \_\_\_\_\_
Black Chaff (*Xanthomonas campestris* pv. *translucens*)
 \_\_\_\_\_
Bacterial Leaf Blight (*Pseudomonas syringae* pv. *syringae*)
 \_\_\_\_\_

Other (SPECIFY) \_\_\_\_\_

 \_\_\_\_\_

Other (SPECIFY) \_\_\_\_\_

 \_\_\_\_\_

Other (SPECIFY) \_\_\_\_\_

 \_\_\_\_\_

Other (SPECIFY) \_\_\_\_\_

 \_\_\_\_\_

15. INSECT: (0=Not Tested; 1=Susceptible; 2=Resistant; 3=Intermediate; 4=Tolerant)

PLEASE SPECIFY BIOTYPE (where needed)

Hessian Fly (*Mayetiola destructor*)

☐ 0

Other (SPECIFY) \_\_\_\_\_

☐

Stem Sawfly (*Cephus* spp.)

☐ 1

Other (SPECIFY) \_\_\_\_\_

☐

Cereal Leaf Beetle (*Oulema melanopa*)

☐ 0

Other (SPECIFY) \_\_\_\_\_

☐

Russian Aphid (*Diuraphis noxia*)

☐ 0

Other (SPECIFY) \_\_\_\_\_

☐

Greenbug (*Schizaphis graminum*)

☐ 0

Other (SPECIFY) \_\_\_\_\_

☐

Aphids

☐

Other (SPECIFY) \_\_\_\_\_

☐

16. ADDITIONAL INFORMATION ON ANY ITEM ABOVE, OR GENERAL COMMENTS:

**Table I**

Yield in pounds per acre of Cuyama and presently, grown varieties in Western Plant Breeders' trials in California and Arizona.

Location	Year	Cuyama	Brooks	Yecora Rojo	Express
Phoenix, AZ	1991	8192	7923	7744	8128
	1992	6293	6689	6032	6003
	1993	8482	7680	7356	7765
	1994	8147	7525	7036	7362
Phoenix Late, AZ	1993	7168	7578	7407	6912
	1994	6655	6052	5715	6258
El Centro, CA	1994	7169	6678	6544	7035
San Joaquin, CA	1992	4611	4195	3770	4147
	1993	6860	6040	5640	5800
	1994	6825	7057	6651	6767
Davis, CA	1991	8559	8043	7512	7421
Isleton, CA	1991	6910	7440	7178	7157
	1992	6902	5249	5158	6264
Yuma, AZ	1993	6622	6622	6263	6042
	1994	<u>7083</u>	<u>7168</u>	<u>6957</u>	<u>6758</u>
TOTALS		7099	6769	6464	6694

**Table II**

Percent protein of Cuyama and presently, grown varieties in Western Plant Breeders' trials in California and Arizona.

<u>Location</u>	<u>Year</u>	<u>Cuyama</u>	<u>Brooks</u>	<u>Yecora Rojo</u>	<u>Express</u>
Phoenix, AZ	1992	12.4	12.5	12.4	13.4
	1993	13.6	13.3	13.5	14.0
	1994	13.5	13.5	13.1	14.5
Phoenix Late, AZ	1993	13.5	12.4	13.2	14.1
	1994	12.6	12.9	13.3	13.6
Yuma, AZ	1993	13.4	14.4	14.6	14.9
	1994	14.1	14.7	14.7	15.2
El Centro, CA	1994	13.6	14.1	14.1	14.4
San Joaquin, CA	1993	11.9	12.2	11.9	12.6
	1994	13.8	13.8	14.0	14.8
Isleton, CA	1992	<u>11.6</u>	<u>11.8</u>	<u>12.1</u>	<u>11.4</u>
TOTALS		13.1	13.2	13.4	13.9

**Table III**

Plant Height in inches of Cuyama and presently grown varieties in Western Plant Breeders' trials in California and Arizona.

<u>Location</u>	<u>Year</u>	<u>Cuyama</u>	<u>Brooks</u>	<u>Yecora Rojo</u>	<u>Express</u>
Phoenix, AZ	1992	35	35	33	40
	1993	40	39	37	42
	1994	38	34	32	37
Phoenix Late, AZ	1993	39	37	36	44
	1994	33	31	28	33
Yuma, AZ	1993	37	34	30	36
El Centro, CA	1994	35	32	30	36
San Joaquin, CA	1992	34	32	30	33
	1993	38	34	30	37
	1994	32	30	29	34
Isleton, CA	1992	<u>35</u>	<u>34</u>	<u>34</u>	<u>35</u>
TOTALS		36.0	33.8	31.7	37.1

**Table IV**

Days to anthesis after March 1 of Cuyama and presently grown varieties in Western Plant Breeders' trials in Arizona.

Location	Year	Cuyama	Brooks	Yecora Rojo	Express
Phoenix, AZ	1992	30	30	27	33
	1993	18	21	18	25
	1994	30	26	24	32
Phoenix Late, AZ	1993	30	29	28	33
	1994	40	38	37	45
Yuma, AZ	1993	<u>15</u>	<u>14</u>	<u>11</u>	<u>18</u>
TOTALS		27	26	24	31

t - Test comparison of days to anthesis after March 1 of Cuyuma and Express.

t with 5 df 5.1174 \*\*

\*\* Significant at .01 level

**Table V**

Test weight in pounds/bushel of Cuyama and presently grown varieties in Western Plant Breeders' trials.

Location	Year	Cuyama	Brooks	Yecora Rojo	Express
Phoenix, AZ	1992	61.7	62.7	63.0	61.7
	1993	62.9	64.6	64.7	63.9
	1994	62.1	62.1	61.9	62.1
Phoenix Late, AZ	1993	60.5	63.1	63.3	63.0
	1994	63.4	63.4	62.4	64.2
Yuma, AZ	1993	63.0	63.4	62.9	62.9
	1994	60.9	60.8	61.2	60.9
El Centro, CA	1994	61.9	62.4	62.3	63.7
San Joaquin, CA	1993	61.2	62.1	62.2	62.0
	1994	61.0	62.2	61.2	62.0
Isleton, CA	1992	<u>62.2</u>	<u>63.8</u>	<u>64.3</u>	<u>63.5</u>
TOTALS		61.9	62.8	62.7	62.7

**Table VI**

S.D.S sedimentation of Cuyama and presently grown varieties in Western Plant Breeders' trials.

Location	Year	Cuyama	Brooks	Yecora Rojo	Express
Phoenix, AZ	1992	69	79	75	77
	1993	98	94	96	101
	1994	81	85	80	87
Phoenix Late, AZ	1993	101	85	89	94
	1994	80	85	83	81
Yuma, AZ	1993	96	106	97	106
	1994	84	87	82	86
El Centro, CA	1994	106	109	113	108
San Joaquin, CA	1993	109	108	108	105
	1994	112	113	113	111
Isleton, CA	1992	<u>85</u>	<u>87</u>	<u>95</u>	<u>81</u>
TOTALS		93	94	93	94

**Table VII**

% Lodging of Cuyama and presently grown varieties in Western Plant Breeders' trials.

Location	Year	Cuyama	Brooks	Yecora Rojo	Express
Phoenix, AZ	1992	0	0	10	-
	1994	0	10	30	0
Yuma, AZ	1994	7	40	17	3
Isleton, CA	1994	17	17	47	3
Davis, CA	1994	47	67	60	47

**Table VIII**

Leaf rust resistance of Cuyama and presently grown varieties in Western Plant Breeders' trials.\*

Location	Year	Cuyama	Brooks	Yecora Rojo	Express	Susceptible Check
						DA990-131
Isleton, CA	1992	0	0	0	0	9.0
	1994	0	0	1.7	0	3.0
San Jouquin, CA	1992	2	2.8	5.3	0	9.0
Davis, CA	1993	2	1.0	6.0	0	9.0
	1994	0	0	1.7	0	8.0

\* 0 = No disease  
9 = Killed by the disease

**Table IX**

Disease resistance of Cuyama and presently grown varieties in University of California Extension Trials.

<u>SEPTORIA</u>					
<u>Location</u>	<u>Year</u>	<u>Cuyama</u>	<u>Brooks</u>	<u>Yecora Rojo</u>	<u>Express</u>
Butte	1993	4.5	4.5	4.5	1.0
	1994	4.5	8.0	7.5	1.0
Sutter	1993	2.5	2.0	2.3	1.0
	1994	3.0	4.5	5.0	1.0
UC Davis, CA	1993	5.3	6.3	6.5	1.5
	1994	3.0	5.3	5.5	1.0
Delta	1993	4.5	5.8	5.3	1.3
	1994	1.0	1.5	1.8	1.0

<u>LEAF RUST</u>					
<u>Location</u>	<u>Year</u>	<u>Cuyama</u>	<u>Brooks</u>	<u>Yecora Rojo</u>	<u>Express</u>
Butte	1993	1.0	1.0	2.3	1.0
Sutter	1993	2.3	3.0	4.3	1.0
	1994	1.0	1.5	3.0	1.0
UC Davis, CA	1994	1.3	1.0	2.5	1.0
Delta	1994	1.8	1.8	4.3	1.0
Merced	1993	2.0	2.5	4.8	1.0
	1994	1.3	1.0	5.5	1.0
Kings	1993	1.0	1.0	3.0	1.0
	1994	2.0	2.0	4.0	1.0
Kern	1993	2.5	1.8	4.3	1.0
	1994	2.3	2.8	4.8	1.0

Table IX continued

STRIPE RUST

Location	Year	Cuyama	Brooks	Yecora Rojo	Express	Susceptible Check
Butte	1994	1.0	1.0	1.0	1.0	4.5
Sutter	1994	1.0	1.5	1.0	1.0	6.0
UC Davis, CA	1994	1.0	1.3	1.0	1.0	6.0
Delta	1994	1.3	1.0	1.0	1.0	3.5
Merced	1994	2.5	1.0	1.3	1.0	4.0
Kings	1993	1.0	1.3	1.0	1.0	--
	1994	1.5	1.0	1.0	1.0	4.0
Kern	1994	1.0	1.0	1.0	1.0	2.5

1 = 0% - 3%  
 2 = 4% - 14%  
 3 = 15% - 29%  
 4 = 30% - 49%  
 5 = 50% - 69%  
 6 = 70% - 84%  
 7 = 85% - 95%

area of flag leaf affected

**Table X**

Milling and baking quality of Cuyama and Yecora Rojo in Western Plant Breeders' trials. \*

	<b>Cuyama</b>				<b>Yecora Rojo</b>			
	1993 San Joaquin	1993 PH	1994 San Joaquin	1994 El Centro	1993 San Joaquin	1993 PH	1994 San Joaquin	1994 El Centro
Protein	11.3	11.7	13.0	13.1	11.3	12.9	13.2	13.6
Ash	1.6	1.49	1.56	1.6	1.5	1.46	1.52	1.62
Hardness	56.1	74.4	74.4	82.9	56.9	52.0	79.9	87.5
Flour Yld	68.8	69.5	66.3	68.3	59.8	70.7	67.9	69.4
Wet Gluten	20.6	27.2	29.2	28.1	21.4	30.1	30.4	28.4
Farinograph								
Absorp.	57.0	62.3	61.8	59.7	56.3	62.3	61.7	60.5
Arriv.	1.00	2.5	8.5	1.8	1.75	4.5	9.5	2.0
Mix peak	1.75	10.0	20.0	7.0	1.75	9.0	18.5	10.5
Mix Tolerance	29.0	15.3	26.5	20.5	30.0	12.5	26.5	25.0
MTI	45	40	30	30	10	80	10	0
Loaf Volume	825	900	925	925	790	940	880	885
Sp. Volume	6.04	6.32	6.51	6.51	5.64	6.57	6.11	6.23
Texture	U	S	S	S	U	S	S	S
Score	2	4	4	4	1	4	3	4

\* Quality analysis was performed by the California Wheat Commission Laboratory.

## Exhibit E

The variety ***Cuyama*** for which Plant Variety Protection is hereby sought was developed by Kim C. Shantz, an employee of Western Plant Breeders, Inc. all rights to any invention, discovery, or development made by the employee while employed by Western Plant Breeders, Inc., were assigned to Western Plant Breeders, Inc. with no rights of any kind retained by the employee.

U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

**EXHIBIT E**  
**STATEMENT OF THE BASIS OF OWNERSHIP**

1. NAME OF APPLICANT(S) <i>WESTERN Plant Breeders, Inc.</i>	2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER <i>PH 990-15</i>	3. VARIETY NAME <i>CUYAMA</i>
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP, and Country) <i>8111 Timberline Drive BOZEMAN, MT 59718</i>	5. TELEPHONE (include area code) <i>(406) 587-1218</i>	6. FAX (include area code) <i>(406) 586-8247</i>
7. PVPO NUMBER <i>9700026</i>		
8. Does the applicant own all rights to the variety? Mark an "X" in appropriate block. If no, please explain. <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		

9. Is the applicant (individual or company) a U.S. national or U.S. based company? If no, give name of country <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	
10. Is the applicant the original owner? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO If no, please answer <u>one</u> of the following:	
a. If original rights to variety were owned by individual(s), is (are) the original owner(s) a U.S. national(s)? <input type="checkbox"/> YES <input type="checkbox"/> NO If no, give name of country	
b. If original rights to variety were owned by a company(ies), is(are) the original owner(s) a U.S. based company? <input type="checkbox"/> YES <input type="checkbox"/> NO If no, give name of country	
11. Additional explanation on ownership (if needed, use reverse for extra space):	

**PLEASE NOTE:**

Plant variety protection can be afforded only to owners (not licensees) who meet one of the following criteria:

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.
2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.
3. If the applicant is an owner who is not the original owner, both the original owner and the applicant must meet one of the above criteria.

The original breeder/owner may be the individual or company who directed final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definition.

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 10 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

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